

1. INTRODUCTION

This publication provides "Instructions" on product application and a "Maintenance and Inspection Procedure" for:

47516 Mod. L 47517 Mod. P 47469 Mod. H 69957 Mod. A	Used in Tool No. 69005	46282 Mod. G 46284 Mod. K 47518-1 48237	Used in Tool No. 69010
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These heads are used to crimp:

- PIDG★ Terminals and Splices on stranded copper wire sizes 26 thru 10.
- PIDG Nylon Insulation Restricting Terminals on stranded copper wire sizes 26 thru 10.
- PLASTI-GRIP★ Terminals on solid or stranded copper wire sizes 22 thru 10.

Basic instructions on the use of these heads, wire preparation, etc. are provided in Section 2, "Instructions". Section 3 features a terminal or splice "Crimp Inspection" procedure. Section 4 contains a "Maintenance and Inspection Procedure" which will enable you to establish and maintain a *tool certification program*.

Crimping heads are coated with preservative to prevent rust and corrosion. Wipe this preservative from heads, particularly from crimping surfaces.

These instructions may be used for heads not listed in Figure 2 but accompanied by this I.S. For unlisted heads, use the wire strip dimensions given in Figure 2 for an identical size head.

For further instructions relative to the 69005 and 69010 tools, refer to instructions packaged with the tools.

2. INSTRUCTIONS

WARNING: AVOID PERSONAL INJURY. KEEP FINGERS CLEAR OF CRIMPING JAWS WHEN ACTIVATING TOOL.

2.1 INSTALL CRIMPING HEAD

- (a) DISCONNECT TOOL FROM AIR SUPPLY.

CAUTION: DO NOT OPERATE TOOL WITHOUT HAVING HEAD INSTALLED, AND LOCK SCREW TIGHTENED.

BE SURE TO USE EXTRA LONG ASSEMBLY PINS NO. 38680-4 (SHIPPED WITH AIR TOOL) WHEN INSTALLING HEAD NOS. 47518-1 AND 48237 OR DAMAGE TO AIR TOOL MAY OCCUR.

- (b) Remove assembly pins from mounting lugs as shown in Figure 1A.
- (c) Pull toggle arm forward and loosen lock screw in toggle arm. Do not remove lock screw. See Figure 1A.
- (d) Open jaws and insert toggle lever of crimping head all the way into hole in toggle arm.

- (e) Tighten lock screw just enough to hold toggle lever in toggle arm.
- (f) Orient head so that assembly pin holes in head links align with assembly pin holes in tool mounting lugs as shown in Figure 1B, methods A, B or C.
- (g) After head is oriented, lower it again until toggle arm lock screw is visible. Tighten lock screw.
- (h) Move head back in alignment with mounting lugs and insert assembly pins.

NOTE: For heads mounted by method C (see Figure 1B, first place metallic sleeve (included with head) between link and mounting lug. Then, insert assembly pin through lugs, links and sleeve.

- (i) Connect air supply (85 to 100 PSI).
- (j) Tool is now ready to be used.

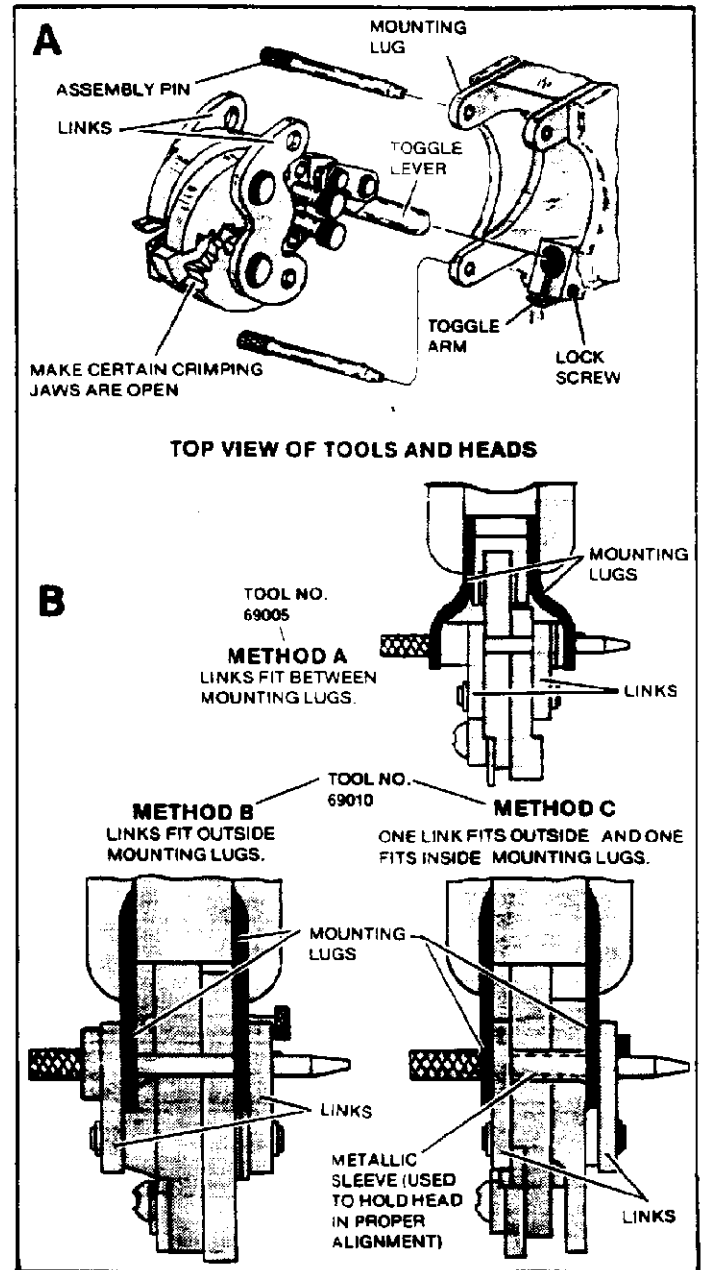


Figure 1

All illustrations and information contained in this instruction sheet are based on the latest product information available at the time of publication.

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2.2 REMOVE CRIMPING HEAD

- (a) DISCONNECT AIR SUPPLY.
- (b) Remove assembly pins and lower head until lock screw in toggle arm is visible.
- (c) Loosen lock screw and pull head out of toggle arm.

2.3 COLOR AND DOT CODING

The crimping head links are color coded to match terminal and splice insulation color. See Figure 2.

Observe the embossed dots on insulation of finished crimps to ensure that correct terminal or splice and tool combination was used. See Figure 2.

2.4 WIRE STRIPPING

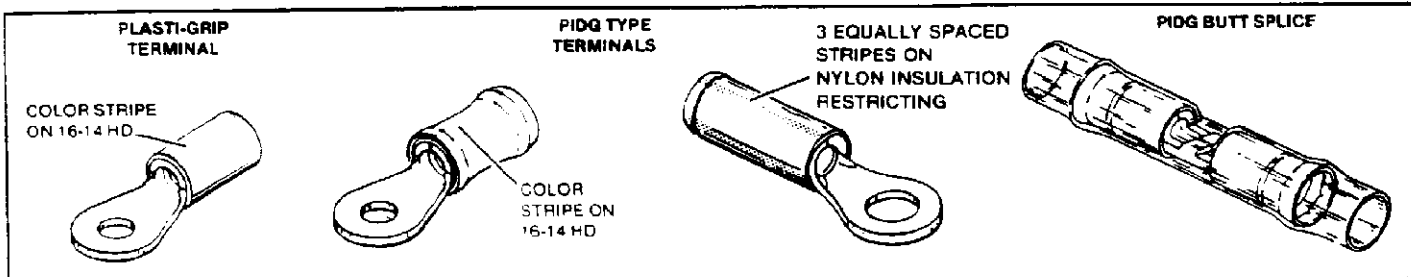
Strip wire to dimensions listed in Figure 2.

NOTE: Do not use wire with nicked or missing conductor strands.

2.5 CRIMPING PROCEDURES

NOTE: Refer to paragraph 2.6 for insulation crimp adjustment.

WARNING: AVOID PERSONAL INJURY. WHEN OPERATING AIR TOOL. EXERCISE CAUTION WHILE HOLDING TERMINALS, SPLICES OR WIRE NEAR CRIMPING AREA.



AIR TOOL NO.	PRODUCT	CRIMPING HEAD NO.	HEAD COLOR AND DOT CODE	WIRE RANGE	TERMINAL OR SPLICE INSULATION COLOR CODE	WIRE STRIP LENGTH			
						TERMINALS		SPLICES	
						Min.	Max.	Min.	Max.
69005	PIDG TERMINALS AND SPLICES	47469 MOD. H	YELLOW 1 DOT	26-22	YELLOW	5/32"	3/16"	11/64"	13/64"
		69957 MOD. A	WHITE 2 DOTS	24-20	NATURAL COLOR TRANSLUCENT	3/16"	7/32"	7/32"	1/4"
	PIDG TERMINALS & SPLICES AND PLASTI-GRIP TERMINALS	47516 MOD. L	RED 1 DOT	22-16	RED	13/64"	15/64"	1/4"	9/32"
		47517 MOD. P	BLUE 2 DOTS	16-14	BLUE				

AIR TOOL NO.	PRODUCT	CRIMPING HEAD NO.	HEAD COLOR AND DOT CODE	WIRE SIZE	INSULATION DIAMETER RANGE	TERMINAL INSULATION COLOR CODE	WIRE STRIP LENGTH	
							TERMINALS	
							Min.	Max.
69005	PIDG NYLON INSULATION RESTRICTING TERMINALS	47469 MOD. H	YELLOW 1 DOT	26	026-.055	YELLOW W/BLACK STRIPE	3/16"	7/32"
				24	031-.055	YELLOW W/BLUE STRIP		
		47516 MOD. L	RED 1 DOT	22	038-.110	RED W/GREEN STRIPE	1/4"	9/32"
				20	046-.110	RED W/RED STRIPE		
				18	056-.110	RED W/WHITE STRIPE		
				16	063-.130	BLUE W/BLUE STRIPE		
47517 MOD. P	BLUE 2 DOTS	14	078-.130	BLUE W/GREEN STRIPE				

AIR TOOL NO.	PRODUCT	CRIMPING HEAD NO.	HEAD COLOR AND DOT CODE	WIRE RANGE	TERMINAL OR SPLICE INSULATION COLOR CODE	WIRE STRIP LENGTH			
						TERMINALS		SPLICES	
						Min.	Max.	Min.	Max.
69010	PIDG TERMINALS & SPLICES AND PLASTI-GRIP TERMINALS	46282 MOD. G	RED 1 DOT	22-16	RED	13/64"	15/64"	1/4"	9/32"
		46284 MOD. K	BLUE 2 DOTS	16-14	BLUE				
		47518-1	YELLOW 1 DOT	12-10 OR 16-14 HD	12-10 YELLOW	5/16"	11/32"	11/32" ▲	3/8" ▲
	48237 (L.G. EXP.)	YELLOW 1 DOT	12-10 OR 16-14 HD	16-14 HD YELLOW WITH BLACK STRIPE					

AIR TOOL NO.	PRODUCT	CRIMPING HEAD NO.	HEAD COLOR AND DOT CODE	WIRE SIZE	INSULATION DIAMETER RANGE	TERMINAL INSULATION COLOR CODE	WIRE STRIP LENGTH	
							TERMINALS	
							Min.	Max.
69010	PIDG NYLON INSULATION RESTRICTING TERMINALS	46282 MOD. G	RED 1 DOT	22	038-.110	RED W/GREEN STRIPE	1/4"	9/32"
				20	046-.110	RED W/RED STRIPE		
				18	056-.110	RED W/WHITE STRIPE		
		46284 MOD. K	BLUE 2 DOTS	16	063-.130	BLUE W/BLUE STRIPE	3/8"	13/32"
				14	078-.130	BLUE W/GREEN STRIPE		
		47518-1	YELLOW 1 DOT	12	095-.200	YELLOW W/YELLOW STRIPE		
				10	.119-.200	YELLOW W/BROWN STRIPE		

▲ Strip length applies for 12-10 splice only.

Figure 2

2.5.1 Terminal Crimping Procedure

- (a) Be sure terminal insulation color code matches head color code.
- (b) Place terminal in dies so that tongue goes under locator and wire barrel butts against locator. See Figure 3.
- (c) Insert stripped wire until end of conductor butts against locator as shown in Figure 3.
- (d) Activate tool to complete the crimp.
- (e) Refer to Section 3 and Figure 7 for terminal crimp inspection procedure.

2.5.2 Butt Splice Crimping Procedure

- (a) Be sure splice insulation color code matches head color code.
- (b) Position the butt splice so that the window indent of splice faces upper jaw and slides under locator. See Figure 4A.
- (c) Insert wire into wire barrel of splice until end of conductor butts against splice wire stop. See Figure 4A.
- (d) Activate tool to complete the crimp.
- (e) To crimp other half of butt splice, remove it and reposition uncrimped half in crimping jaws and follow same procedure used to crimp first half of splice. See Figure 4B.
- (f) Refer to Section 3 and Figure 7 for crimp inspection procedure.

2.6 INSULATION CRIMP ADJUSTMENT

NOTE: Certain special heads do not contain an insulation crimp adjustment. Therefore, the following steps may be disregarded.

2.6.1 PIDG Terminals and Splices

NOTE: PIDG terminals and splices feature a wire insulation "grip".

The insulation crimping section of the crimping head has three positions: 1 — Tight, 2 — Medium, 3 — Loose.

- (a) Insert insulation adjustment pin in No. 3 position. See Figure 5.
- (b) Place terminal or splice in crimping dies as shown in Figure 3 or 4.
- (c) Insert UNSTRIPPED wire into ONLY the insulation barrel (see Figure 3 or 4) of the terminal or splice.

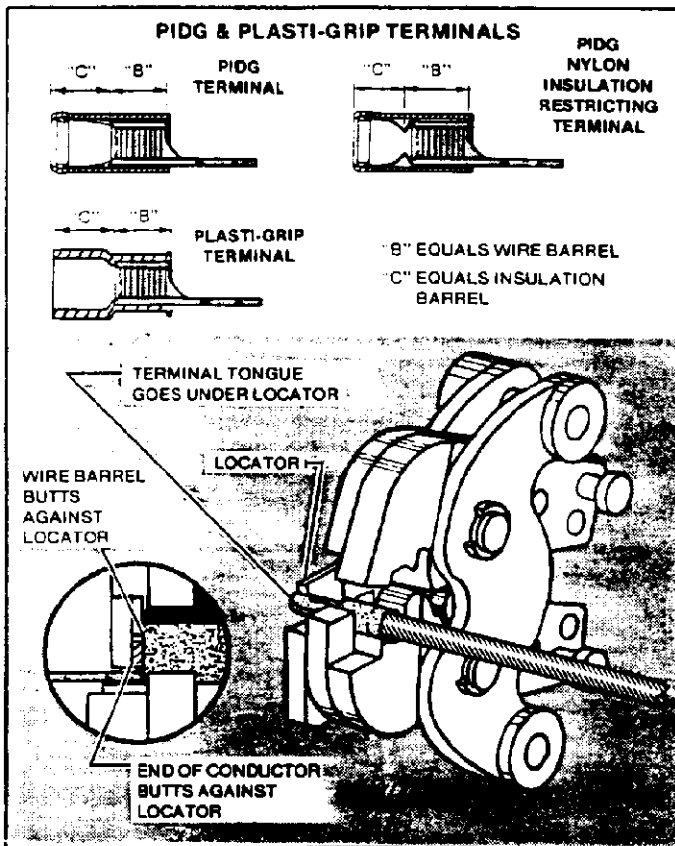


Figure 3

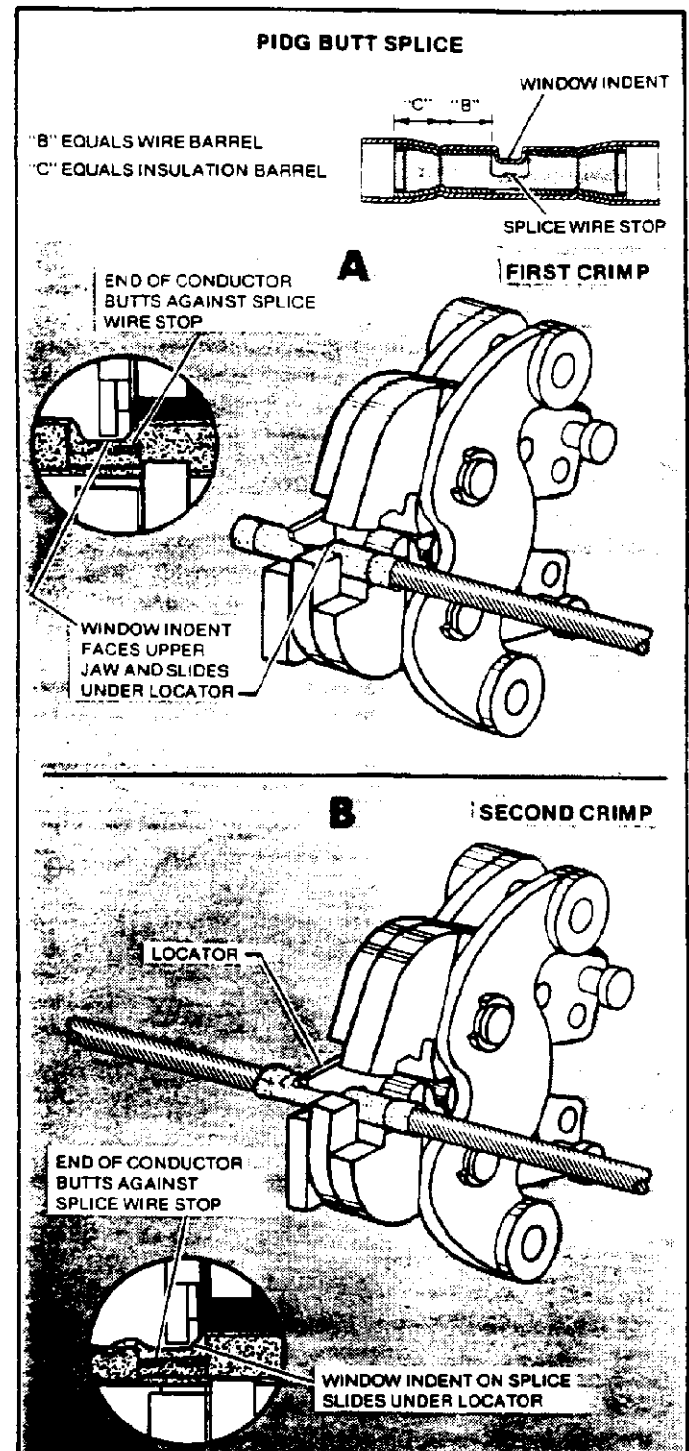


Figure 4

Perform a crimp (Paragraph 2.5). Remove crimped terminal or splice and check insulation grip as follows: Bend the wire back and forth once. Terminal or splice should retain grip on wire insulation. If wire pulls out, set insulation adjustment pins in next tighter position (No. 2), and repeat crimp over previously crimped terminal or splice.

Repeat adjustment as necessary until desired insulation grip is obtained. Do not use a tighter setting than required.

Always place both adjustment pins in the same position as shown in Figure 5.

2 PLASTI-GRIP Terminals

NOTE: PLASTI-GRIP terminals feature a wire insulation "support" only.

There are three insulation crimp adjustments on this crimping head: 1 - tight, 2 - medium, 3 - loose.

Adjustment No. 3 is for wire having a large insulation diameter.

Adjustment No. 2 is for wire having a medium insulation diameter.

Adjustment No. 1 is for wire having a small insulation diameter.

Perform the insulation crimp adjustment by placing adjustment pins in No. 3 (loose) position as shown in Figure 5.

Perform a crimp (refer to paragraph 2.5). Remove crimped terminal from dies and visually inspect insulation barrel crimp of terminal. Insulation barrel crimp should be in contact with, and "support" wire insulation.

If insulation barrel crimp does not provide "support" for wire insulation, place adjustment pins in No. 2 (medium) position and repeat crimp over previously crimped terminal.

Repeat adjustment as necessary until desired insulation "support" is obtained. Do not use a tighter setting than required.

Always place both adjustment pins in the same position as shown in Figure 5.

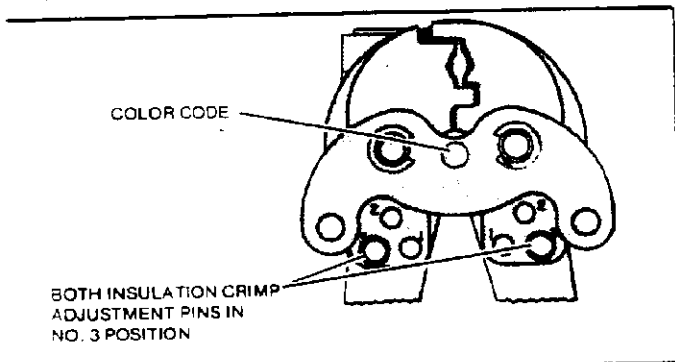


Figure 5

CRIMP INSPECTION

Inspect crimped terminals and splices by checking the features described in Figure 7.

Use only the terminals and splices that meet the conditions shown in the "ACCEPT" column.

"REJECT" terminals and splices can be avoided through careful use of instructions in Section 2, and by performing regular head maintenance as instructed in Section 4.

4. MAINTENANCE/INSPECTION PROCEDURE

AMP recommends that a maintenance/inspection program be performed periodically to ensure dependable and uniform terminations. Heads should be inspected at least once a month. Frequency of inspection may be adjusted to suit your requirements through experience. Frequency of inspection is dependent upon:

1. The care, amount of use, and handling of the head.
2. The type and size of the products crimped.
3. The degree of operator skill.
4. The presence of abnormal amounts of dust and dirt.
5. Your own established standards.

Each crimping head is thoroughly inspected before packaging. Since there is a possibility of head damage in shipment, new crimping heads should be inspected in accordance with Section 4 when received in your plant.

4.1 CLEANING

The crimping head should be immersed in degreasing compound to remove accumulated dirt, grease and foreign matter. Remove remaining degreasing compound with a lint free cloth. When degreasing compounds are not available, head may be wiped clean with a lint free cloth. Relubricate head as instructed in paragraph 4.3, before placing it back in service.

NOTE: Make certain the degreasing compound does not attack paint or plastic materials.

4.2 VISUAL INSPECTION

- (a) Inspect the crimping head for missing pins or retaining rings. If parts are missing or defective, refer to Figure 11 for customer replaceable parts.
- (b) Inspect the die closure surfaces for flattened, broken or pitted conditions. Although dies may gage within permissible limits, worn or damaged die closure surfaces are objectionable and can affect the quality of the crimp. Examples of possible damaged die closure surfaces are shown in Figure 6.

4.3 LUBRICATION

Lubricate all pins, pivot points and bearing surfaces with a good grade S.A.E. No. 20 motor oil as follows:

- Heads used in daily production — Lubricate daily
- Heads used daily (occasional) — Lubricate weekly
- Heads used weekly — Lubricate monthly

Wipe excess oil from head, particularly from die closure area. Oil transferred from the die closure onto certain terminations may affect the electrical characteristics of an application.

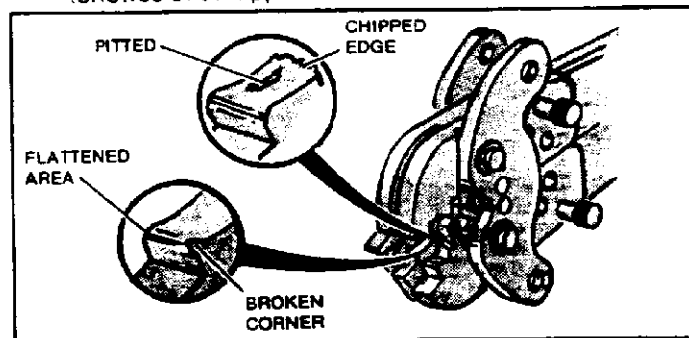
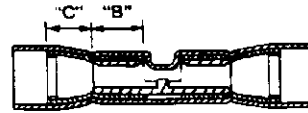
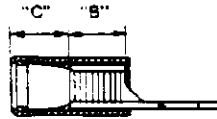


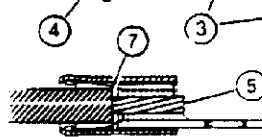
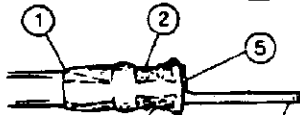
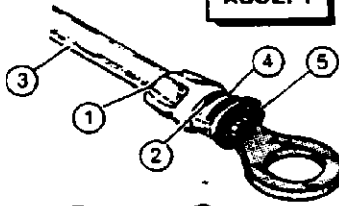
Figure 6

CRIMP INSPECTION

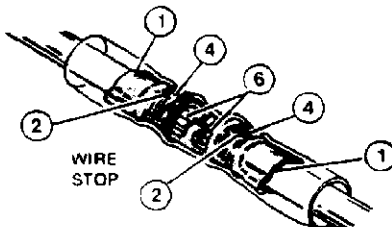
"B" EQUALS WIRE BARREL
"C" EQUALS INSULATION BARREL



ACCEPT



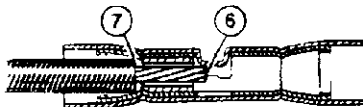
WIRE RANGE
STAMPED UNDER
TONGUE



WIRE
STOP



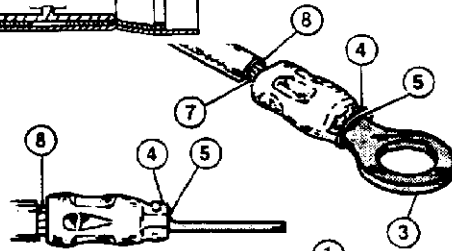
WIRE RANGE
STAMPED HERE



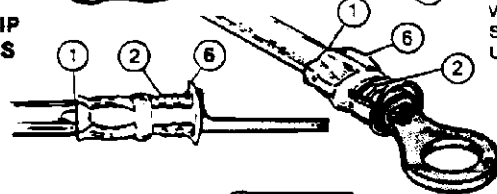
- ① Insulation barrel is in firm contact with wire insulation.
- ② Correct color code, dot code, and tool combination.
- ③ Wire size is within wire range stamped on terminal tongue or splice.
- ④ Crimp centered on wire barrel.
- ⑤ End of conductor is flush with, or extends beyond end of terminal wire barrel.
- ⑥ End of conductor against wire stop of splice.
NOTE: If conductor is not against wire stop, conductor must at least be flush with, or extend slightly beyond wire barrel of splice.
- ⑦ Wire insulation does not enter wire barrel.

REJECT

PIDG
INSULATION
RESTRICTING
TERMINALS



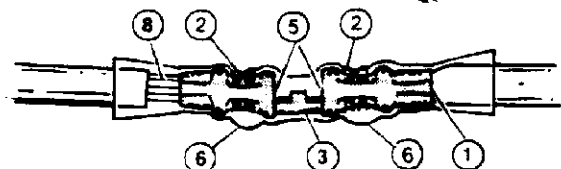
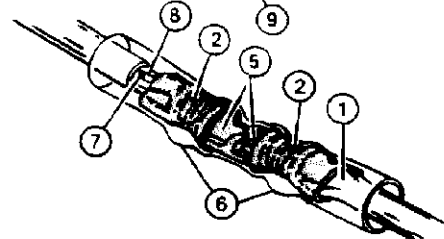
PIDG &
PLASTI-GRIP
TERMINALS



WIRE RANGE
STAMPED
UNDER
TONGUE



PIDG
BUTT SPLICE



WIRE RANGE
STAMPED HERE



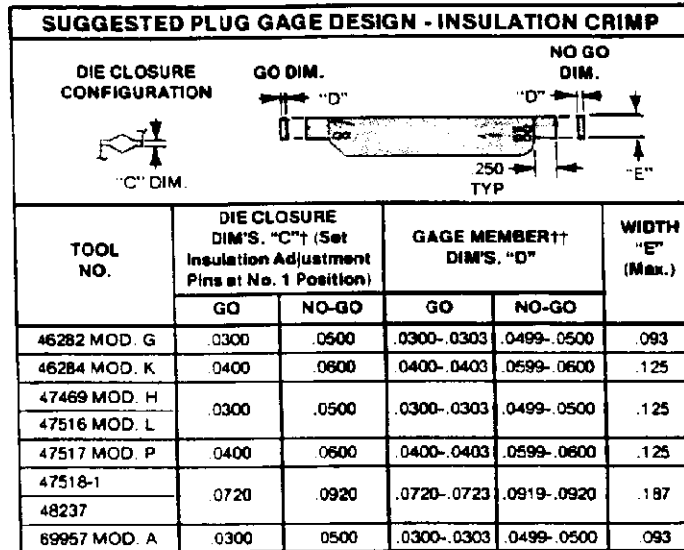
- ① Wire insulation extruded. (Insulation crimp too tight on PIDG terminals) See Paragraph 2.6.
- ② Wrong dot code and color code combination. See chart, Figure 2.
- ③ Wire size is not within wire range stamped on terminal tongue or splice.
- ④ Crimp not centered on wire barrel. (Terminal was not butted against locator. See Figure 3.)
- ⑤ End of conductor is not flush with or extending beyond end of wire barrel. (Check for correct strip length.)
- ⑥ Excessive flash or extruded insulation (wrong tool, terminal, or splice combination used, or damaged dies.) See Figure 2.
- ⑦ Nicked or missing conductor strands.
- ⑧ Wire not fully inserted or wrong strip length.
- ⑨ Wire insulation entered wire barrel. Check for correct wire size or strip length.

Figure 7

4.4 DIE CLOSURE INSPECTION

Every crimping head is inspected for proper die closure before packaging. An inspection should be performed periodically to check the die closure for excessive wear. The die closure inspection is accomplished using the GO/NO-GO plug gages. AMP neither manufactures nor sells plug gages. A suggested plug gage design and the GO/NO-GO dimensions of the plug gage members are listed in Figures 8 and 9. The following procedure is recommended for inspecting the die closures.

- DISCONNECT AIR SUPPLY and remove head from tool.
 - Remove traces of oil or dirt from jaw bottoming surfaces, die closure surfaces, and plug gage members.
 - Close wire barrel crimping jaws until they are bottomed but not under pressure.
 - With wire barrel jaws bottomed, check the wire barrel crimp die closure using the proper plug gage. Hold gage in straight alignment with the die closure, lift locator and carefully try to insert, without forcing, the GO member. See Figure 10, Detail A. The GO member must pass completely through the die closure.
 - Try to insert the NO-GO member. The NO-GO member may enter partially, but must not pass completely through the die closure.
 - With wire barrel crimping jaws bottomed and adjustment pins in No. 1 position, check the insulation crimp die closure using the proper plug gage in the same manner as steps (d) and (e). See Figure 10, Detail B.
- NOTE: Due to the scissors action of the crimping jaws, the opening of the insulation crimp closure is slightly smaller at the back than it is in front. Therefore, if the NO-GO gage does not enter the back of closure but does partially enter front of closure, the closure is considered dimensionally correct.
- If both wire barrel and insulation crimp die closures meet the GO/NO-GO gage conditions, the die closures may be considered dimensionally correct.
 - If you find that the die closures do not conform with the GO/NO-GO gage conditions, contact your local AMP field representative.



† Die closure dimensions apply when wire barrel jaws are bottomed, but not under pressure.

†† Material — Tool Steel.

Figure 9

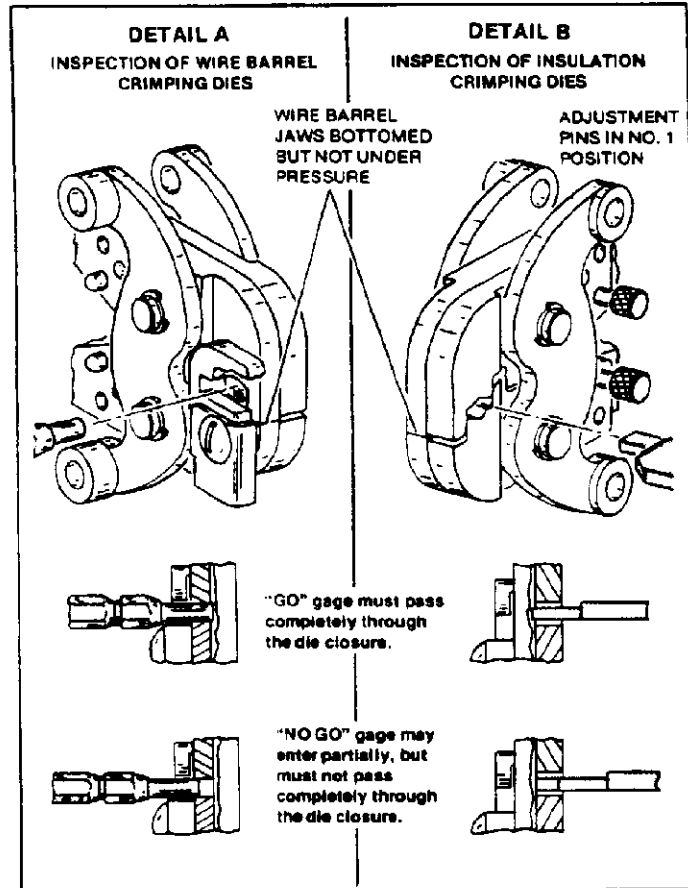
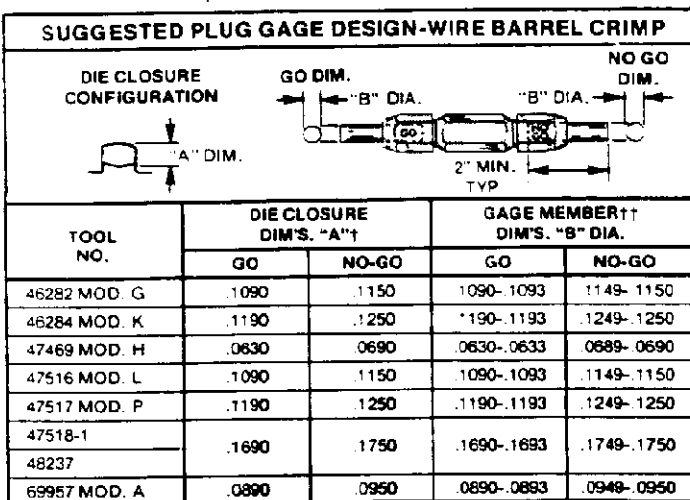


Figure 10



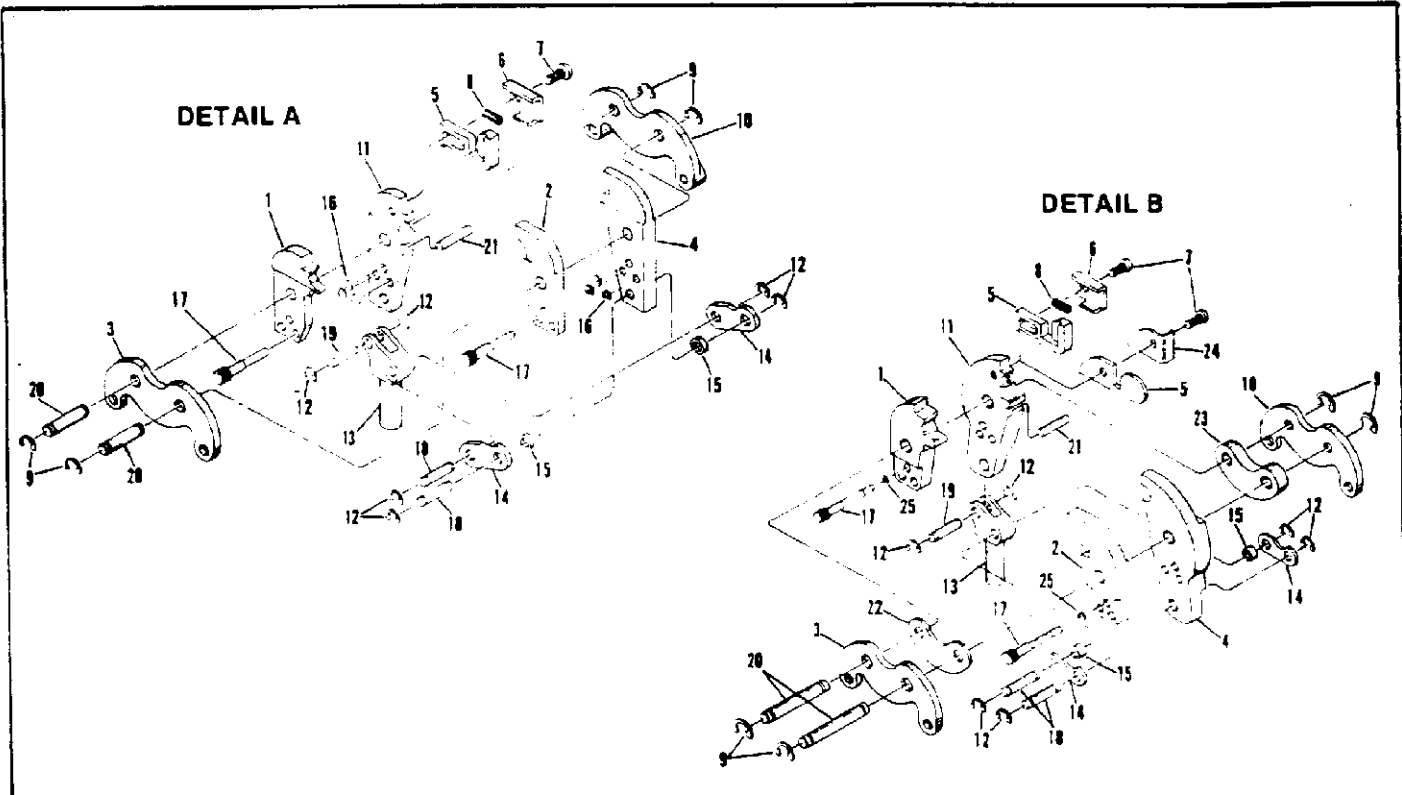
† Die closure dimensions apply when wire barrel jaws are bottomed, but not under pressure.

†† Material — Tool Steel.

Figure 8

4.5 REPLACEMENT PARTS

It may be advantageous to stock certain replaceable parts to prevent loss of production time. Figure 11 lists the customer replaceable parts that can be purchased from AMP Incorporated, Harrisburg, PA 17105, or a wholly owned subsidiary of AMP Incorporated.



ITEM	DESCRIPTION	CRIMPING HEAD NUMBERS & COMPONENT PART NUMBERS								
		QTY.	46282 MOD. G DETAIL A	46284 MOD. K DETAIL A	47489 MOD. H DETAIL A	47516 MOD. L DETAIL A	47517 MOD. P DETAIL A	47518-1 DETAIL B	48237 DETAIL B	69957 MOD. A DETAIL A
1	JAW, INSULATION	-	1-45804-6	1-45804-7	47360	1-45804-6	1-45804-7	47771	48873	47961
2	JAW, INSULATION	1	1-45802-9	2-45802-0	47359	1-45802-9	2-45802-0	47772	48872	47960
3	LINK	1	306321-6	306321-8	306321-3	4-306321-7	4-306321-6	3-306322-5	306322-9	6-306321-3
4	JAW, NEST	1	47255-2	45358	1-45751-2	47255-2	45358	47563-2	47563-2	1-45751-1
5	LOCATOR	1	302993	45965-6	3-304052-6	302993	45965-6	303251	38659	303542
6	HSG. LOCATOR	1	302994	302994	302994	302994	302994	303252	-	302994
7	SCREW	1	9-305927-1	9-305927-1	3-306105-9	9-305927-1	9-305927-1	6-306105-9	3-21016-6	9-305927-1
8	SPRING	1	301201	301201	301201	301201	301201	304373	-	301201
9	RING, RETAINING	4	21045-6	21045-6	21045-6	21045-6	21045-6	300102	300102	21045-6
10	LINK	1	306321-1	306321-1	3-306321-3	3-306321-3	3-306321-3	306322-4	306322-4	3-306321-3
11	JAW, ANVIL	1	47256-2	45357	1-45750-1	47256-2	45357	47564-2	47564-2	1-45750-0
12	RING, RETAINING	5	21045-3	21045-3	21045-3	21045-3	21045-3	21045-6	21045-6	21045-3
13	LEVER, TOGGLE	1	301395	301395	38043	38043	38043	38379	38379	38043
14	LINK, TOGGLE	2	38039	38039	38039	38039	38039	38380	38380	38039
15	SPACER	2	38779	38779	38779	38779	38779	38716	38716	38779
16	RING	6	39208	39208	39208	39208	39208	-	-	39208
17	PIN, ADJUSTMENT	2	303489	303489	39207	39207	39207	302015	302015	39207
18	PIN, RETAINING	2	38781	38781	38781	38781	38781	300449	300449	38781
19	PIN, RETAINING	1	38783	38783	38783	38783	38783	300448	300448	38783
20	PIN, RETAINING	2	38807	38807	38807	38807	38807	38651	38651	38807
21	PIN, PIVOT	1	39085	39085	39085	39085	39085	302014	302014	39085
22	SPACER, LINK	1	-	-	-	-	-	302013	302013	-
23	SPACER, LINK	1	-	-	-	-	-	38662	38662	-
24	BRACKET	1	-	-	-	-	-	-	38660	-
25	RING	2	-	-	-	-	-	302016	302016	-

Figure 11

REL. DATE	REV. DATE	APPROVALS	
11-29-57	3-16-82	ENG. <i>Dallas Schaefer</i>	PUB. <i>Paul Felty</i>